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EXAMINER	
FOX, JAMAL A	
ART UNIT	PAPER NUMBER
2664	

DATE MAILED: 12/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/897,973	LEE, JONG ICK	
	Examiner	Art Unit	
	Jamal A Fox	2664	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 July 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11,13-26 and 28* is/are rejected.

7)☒ Claim(s) *12 and 27* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *20 August 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☒ Certified copies of the priority documents have been received in Application No. 09/897,973.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1, 2, 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hebb et al. (U.S. Patent No. 6,320,864).

Referring to claim 1, Hebb et al. discloses a cell processing method in an asynchronous transfer mode (ATM) switch (Fig. 1 ref. sign 16 and respective portions of the spec.) comprising: storing unicast cells and multicast cells in a buffer (col. 8 lines 28-34), and storing addresses of the respective cells in address queues (col. 2 lines 44-67, here it is understood that the VPI/VCI addresses are the addresses and the tables are the address queues); assigning respective priorities to the cells stored in the buffer (col. 2 lines 35-43 and col. 5 lines 30-53); reading out (transmitted, col. 3 lines 22-30) the cells from the buffer according to the assigned priorities; and sending (switched, col. 5 lines 43-47) the cells read out from the buffer to ports, and determining a selected cell (cell, col. 5 lines 54-64) for output, but fails to explicitly teach of the ports being fan-out ports. However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have included to the invention that the ports are fan-out ports because Lee suggest that fan-out ports are output ports and output ports are disclosed in (col. 2 lines 18-24, col. 2 lines 58-61 and col. 3 lines 40-45) of Hebb et al.

Referring to claim 2, Hebb et al. discloses the cell processing method of claim 1, wherein the addresses stored in the address queues of the cells stored in the buffer (col. 8 lines 28-34).

Referring to claim 4 Hebb et al. discloses the cell processing method of claim 1, wherein the address queues for storing the multicast cell addresses are multicast (Multicast Identifier, col. 2 lines 29-34 and col. 4 lines 35-56) connection identifier (MCI) address queues maintained for each MCI.

3. Claims 3, 5-11, 13-26 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hebb et al. in view of Harriman et al.

Referring to claim 3, Hebb et al. discloses the cell processing method of claim 1, but does not explicitly teach of where the multicast cell addresses are stored in the address queues separate from the unicast cell addresses. However, Harriman et al. discloses multicast (multicast, Fig. 1 ref. sign 200 and respective portions of the spec.) cell addresses stored in address queues separate from unicast (unicast queues, Fig. 1 ref. sign 130 and respective portions of the spec.) cell addresses. Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to have the multicast cell addresses being stored address queues separate from the unicast cell addresses of Harriman et al. to the invention of Hebb et al. in order to provide different locations for cell replication as suggested by Harriman et al.

Referring to claim 5, Hebb et al. discloses the cell processing method of claim 4, but fails to explicitly teach where the MCI address queue has one write pointer and a plurality of read pointers equal in number to multiple fan-out ports. However, Harriman

et al. discloses one write pointer (Fig. 2 ref. sign 258 and respective portions of the spec.) and plurality of read pointers (Fig. 2 ref. sign 256 and respective portions of the spec.) equal in number to multiple ports (each output port, col. 6 line 2). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have included the read and write pointers of Harriman et al. to the invention of Hebb et al. in order to determine the next available cell locations as suggested by Harriman et al. It would have been further obvious to one having ordinary skill in the art at the time the invention was made to have included to the invention that the ports are fan-out ports because Lee suggest that fan-out ports are output ports and output ports are disclosed in (col. 2 lines 18-24, col. 2 lines 58-61 and col. 3 lines 40-45) of Hebb et al.

Referring to claim 6, Hebb et al. discloses the cell processing method of claim 1, but fails to explicitly teach of where the buffer is a shared buffer memory. However, Harriman et al. discloses a shared buffer memory in (Fig. 1, ref. sign 112 and respective portions of the spec.). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have included the shared buffer memory of Harriman et al. to the invention of Hebb et al. in order to minimize the total buffer requirements as suggested by Harriman et al.

Referring to claim 7, Hebb et al. discloses the cell processing method of claim 1, but fails to explicitly teach where the priorities of the unicast cells are determined by an order of respective input to the address queues. However, Harriman et al. discloses the priorities of the unicast cells being determined by an order of respective input to the

address queues (col. 4 lines 28-49). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have included the priorities of the unicast cells being determined by an order of respective input to the address queues of Harriman et al. to the invention of Hebb et al. in order to provide for dedicated unicast output queues as suggested by Harriman et al.

Referring to claim 8, Hebb et al. discloses the cell processing method of claim 1, confirming a location where buffers having the cells with the determined priorities are stored (col. 2 lines 35-43), but fails to explicitly teach of the ports being fan out ports; and calculating queue lengths for the respective ports; and determining the priorities by comparing the calculated queue lengths for the respective ports. However, Harriman et al. discloses calculating (calculating, col. 6 lines 12-14) queue lengths for the respective ports; and determining the priorities by comparing (compares, col. 7 lines 33-37) the calculated queue lengths for the respective ports. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have included the calculating queue lengths for the respective ports; and determining the priorities by comparing the calculated queue lengths for the respective ports of Harriman et al. to the invention of Hebb et al. in order in order to determine the queue occupancy as suggested by Harriman et al. It would have been further obvious to one having ordinary skill in the art at the time the invention was made to have included to the invention that the ports are fan-out ports because Lee suggest that fan-out ports are output ports and output ports are disclosed in (col. 2 lines 18-24, col. 2 lines 58-61 and col. 3 lines 40-45) of Hebb et al.

Referring to claim 9, Hebb et al. discloses the cell processing method of claim 8, but fails to explicitly teach where the queue lengths are equal to a respective difference value between a write pointer address and each of a plurality of the read pointer addresses corresponding to a fan-out port. However, Harriman et al. discloses where the queue lengths are equal to a respective difference value between a write pointer address and each of a plurality of the read pointer addresses corresponding to a port (col. 6 lines 12-14). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have included the read and write pointers of Harriman et al. to the invention of Hebb et al. in order to determine the next available cell locations as suggested by Harriman et al. It would have been further obvious to one having ordinary skill in the art at the time the invention was made to have included to the invention that the ports are fan-out ports because Lee suggest that fan-out ports are output ports and output ports are disclosed in (col. 2 lines 18-24, col. 2 lines 58-61 and col. 3 lines 40-45) of Hebb et al.

Referring to claim 10, Hebb et al. discloses the cell processing method of claim 1, but fails to explicitly teach when a head of line (HOL) blocking occurs between the unicast cells during the reading out the cells from the buffer, the unicast cell having a higher priority is read out first, wherein when the HOL blocking occurs between the multicast cells during the reading out the cells from the buffer, the multicast cell having a higher priority is read out first, and wherein when the HOL blocking occurs between the unicast cell and the multicast cell during the reading out the cells from the buffer, the unicast cell is first read out first. However, Harriman et al. discloses avoiding head of

line blocking by comparing the priorities of the unicast and multicast queues in (col. 7 lines 33-42). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have included the cell processing method of Harriman et al. to the invention of Hebb et al. in order to select an output port to transmit an output cell as suggested by Harriman et al.

Referring to claim 11, Hebb et al. discloses the cell processing method of claim 1, but fails to explicitly teach of where the determining the selected cell for output at the fan-out ports comprises outputting the cell having a longer queue length as the selected cell when the unicast cell and the multicast cell simultaneously reach the fan-out port. However, Harriman et al. discloses a control logic that includes a selector circuit that is controlled by a conventional controller circuit to output cells in accordance with a "fair-sharing" arbitration policy, which transmits the cells with the highest priority (col. 2 line 66 – col. 3 line 13 and col. 5 line 61 – col. 6 line14). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have included the cell processing method of Harriman et al. to the invention of Hebb et al. in order to determine the most appropriate cell for output as suggested by Harriman et al.

Referring to claim 13, Hebb et al. discloses a cell processing method in an asynchronous transfer mode (ATM) switch comprising:

storing unicast cells and multicast cells in a buffer (col. 8 lines 28-34), and storing addresses of the respective cells in address queues (col. 2 lines 44-67, here it is understood that the VPI/VCI addresses are the addresses and the tables are the

address queues); confirming storage locations of the cells having the determined priorities in the buffer (col. 2 lines 35-43); reading out (transmitted, col. 3 lines 22-30) the cells from the buffer according to the determined priorities; and sending the cells read out from the buffer to the ports and determining a cell (cell, col. 5 lines 54-64) of the sent cells to a port for output, but fails to explicitly teach of the ports being fan-out ports and calculating queue lengths for respective fan-out ports of the address queues; determining priorities of the cells by comparing the calculated queue lengths. However, Harriman et al. discloses calculating (calculating, col. 6 lines 12-14) queue lengths for respective fan-out ports of the address queues; determining priorities of the cells by comparing (compares, col. 7 lines 33-37) the calculated queue lengths. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have included the calculating of the queue lengths for respective fan-out ports of the address queues; and determining priorities of the cells by comparing the calculated queue lengths of Harriman et al. to the invention of Hebb et al. in order to determine the queue occupancy as suggested by Harriman et al. It would have been further obvious to one having ordinary skill in the art at the time the invention was made to have included to the invention that the ports are fan-out ports because Lee suggest that fan-out ports are output ports and output ports are disclosed in (col. 2 lines 18-24, col. 2 lines 58-61 and col. 3 lines 40-45) of Hebb et al.

Referring to claim 14, Hebb et al. discloses the addresses stored in the address queues are addresses of the cells stored in the buffer (col. 8 lines 28-34).

Referring to claim 15, Harriman et al. discloses the multicast cell addresses are stored in multicast address queues and the unicast cell addresses are stored in unicast address queues (See Fig. 1, Address, Unicast Queues and Multicast Engine).

Referring to claim 16, Hebb et al. discloses where the address queues for storing the multicast cell addresses are multicast connection identifier (MCI) address queues maintained for each MCI (Multicast Identifier, col. 2 lines 29-34 and col. 4 lines 35-56).

Referring to claim 17, Hebb et al. discloses the cell processing method of claim 16, but fails to explicitly teach where the MCI address queue has one write pointer and a plurality of read pointers equal in number to fan-out ports. However, Harriman et al. discloses one write pointer (Fig. 2 ref. sign 258 and respective portions of the spec.) and plurality of read pointers (Fig. 2 ref. sign 256 and respective portions of the spec.) equal in number to multiple ports (each output port, col. 6 line 2). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have included the read and write pointers of Harriman et al. to the invention of Hebb et al. in order to determine the next available cell locations as suggested by Harriman et al. It would have been further obvious to one having ordinary skill in the art at the time the invention was made to have included to the invention that the ports are fan-out ports because Lee suggest that fan-out ports are output ports and output ports are disclosed in (col. 2 lines 18-24, col. 2 lines 58-61 and col. 3 lines 40-45) of Hebb et al.

Referring to claim 18, Hebb et al. discloses the cell processing method of claim 13, but fails to explicitly teach of where the buffer is a shared buffer memory. However,

Harriman et al. discloses a shared buffer memory in (Fig. 1, ref. sign 112 and respective portions of the spec.). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have included the shared buffer memory of Harriman et al. to the invention of Hebb et al. in order to minimize the total buffer requirements as suggested by Harriman et al.

Referring to claim 19, Harriman et al. discloses the priorities of the unicast cells being determined according to sequential input to the address queues (col. 2 lines 12-29).

Referring to claim 20, Harriman et al. discloses the queue length being the difference (difference, col. 6 lines 12-14) value between a write pointer address and a read pointer address.

Referring to claim 21, Hebb et al. discloses the cell processing method of claim 13, but fails to explicitly teach when a head of line (HOL) blocking occurs between the unicast cells during the reading out the cells from the buffer, the unicast cell having a higher priority is read out first, wherein when the HOL blocking occurs between the multicast cells during the reading out the cells from the buffer, the multicast cell having a higher priority is read out first, and wherein when the HOL blocking occurs between the unicast cell and the multicast cell during the reading out the cells from the buffer, the unicast cell is first read out first. However, Harriman et al. discloses avoiding head of line blocking by comparing the priorities of the unicast and multicast queues in (col. 7 lines 33-42). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have included the cell processing method of

Harriman et al. to the invention of Hebb et al. in order to select an output port to transmit an output cell as suggested by Harriman et al.

Referring to claim 22, Hebb et al. discloses the cell processing method of claim 13, but fails to explicitly teach of where the sent cells, cells that reach a prescribed fan-out port are one of only a unicast cell, only a multicast cell and both the unicast cell and the multicast cell concurrently, and wherein when both the unicast cell and the multicast cell reach concurrently, the cell having a longer queue length is output. However, Harriman et al. discloses a control logic that includes a selector circuit that is controlled by a conventional controller circuit to output cells in accordance with a "fair-sharing" arbitration policy, which transmits the cells to the output ports (col. 2 line 66 – col. 3 line 13 and col. 5 line 61 – col. 6 line14). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have included the cell processing method of Harriman et al. to the invention of Hebb et al. in order to determine the most appropriate cell for output as suggested by Harriman et al. It would have been further obvious to one having ordinary skill in the art at the time the invention was made to have included to the invention that the ports are fan-out ports because Lee suggest that fan-out ports are output ports and output ports are disclosed in (col. 2 lines 18-24, col. 2 lines 58-61 and col. 3 lines 40-45) of Hebb et al.

Referring to claim 23, Hebb et al. discloses a cell processing apparatus in an asynchronous transfer mode (ATM) switch (Fig. 1 ref. sign 16 and respective portions of the spec.) comprising: a buffer (buffer, col. 8 lines 28-34) that stores cells inputted to the ATM switch; multicast connection identifier (Multicast Identifier, col. 2 lines 29-34

and col. 4 lines 35-56) address queues that store buffer addresses of multicast cells; and ports (output ports, Fig. 1 and respective portions of the spec.) that receive cells from respective address queues, and output (forwarding, col. 4 lines 12-29) the received cells to corresponding destinations (destination, col. 1 lines 17-26), but fails to explicitly teach of unicast address queues that store buffer addresses of unicast cells and the ports being fan-out ports. However, Harriman et al. discloses unicast queues in (Fig. 1 ref. sign 130 and respective portions of the spec.). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have included the unicast address queues of Harriman et al. to the invention of Hebb et al. in order accommodate the point to point connection traffic as suggested by Harriman et al. It would have been further obvious to one having ordinary skill in the art at the time the invention was made to have included to the invention that the ports are fan-out ports because Lee suggest that fan-out ports are output ports and output ports are disclosed in (col. 2 lines 18-24, col. 2 lines 58-61 and col. 3 lines 40-45) of Hebb et al.

Referring to claim 24, Hebb et al. discloses the cell processing method of claim 23, but fails to explicitly teach where the MCI address queue has one write pointer and read pointers equal in number to the fan-out ports. However, Harriman et al. discloses one write pointer (Fig. 2 ref. sign 258 and respective portions of the spec.) and plurality of read pointers (Fig. 2 ref. sign 256 and respective portions of the spec.) equal in number to multiple ports (each output port, col. 6 line 2). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have included the read and write pointers of Harriman et al. to the invention of Hebb et

al. in order to determine the next available cell locations as suggested by Harriman et al. It would have been further obvious to one having ordinary skill in the art at the time the invention was made to have included to the invention that the ports are fan-out ports because Lee suggest that fan-out ports are output ports and output ports are disclosed in (col. 2 lines 18-24, col. 2 lines 58-61 and col. 3 lines 40-45) of Hebb et al.

Referring to claim 25, Hebb et al. discloses the cell processing method of claim 23, but fails to explicitly teach of where the buffer is a shared buffer memory. However, Harriman et al. discloses a shared buffer memory in (Fig. 1, ref. sign 112 and respective portions of the spec.). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have included the shared buffer memory of Harriman et al. to the invention of Hebb et al. in order to minimize the total buffer requirements as suggested by Harriman et al.

Referring to claim 26, Hebb et al. discloses the cell processing method of claim 23, but fails to explicitly teach of where the ATM switch first reads out a unicast cell having a higher priority when head of line (HOL) blocking is produced between the unicast cells, wherein the ATM switch first reads out a multicast cell having a higher priority when the HOL blocking is produced between the multicast cells, and wherein the ATM switch first reads out the unicast cell irrespective of the queue length of the cells when the HOL blocking is produced between the unicast cell and the multicast cell. However, Harriman et al. discloses avoiding head of line blocking by comparing the priorities of the unicast and multicast queues in (col. 7 lines 33-42). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was

made to have included the cell processing method of Harriman et al. to the invention of Hebb et al. in order to select an output port to transmit an output cell as suggested by Harriman et al.

Referring to claim 28, Hebb et al. discloses the cell processing method of claim 23, but fails to explicitly teach of where the ATM switch determines the cell to be outputted according to the queue length when a multicast cell and a unicast cell concurrently reach a fan-out port. However, Harriman et al. discloses a control logic that includes a selector circuit that is controlled by a conventional controller circuit to output cells in accordance with a "fair-sharing" arbitration policy, which transmits the cells to the output ports (col. 2 line 66 – col. 3 line 13 and col. 5 line 61 – col. 6 line14). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have included the cell processing method of Harriman et al. to the invention of Hebb et al. in order to determine the most appropriate cell for output as suggested by Harriman et al. It would have been further obvious to one having ordinary skill in the art at the time the invention was made to have included to the invention that the ports are fan-out ports because Lee suggest that fan-out ports are output ports and output ports are disclosed in (col. 2 lines 18-24, col. 2 lines 58-61 and col. 3 lines 40-45) of Hebb et al.

Allowable Subject Matter

4. Claims 12 and 27 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

5. **Any response to this action should be mailed to:**

Commissioner of Patents and Trademarks
Washington, D.C. 20231

or faxed to:

(703) 305-3988, (for formal communications intended for entry)

Or:

(703) 305-3988 (for informal or draft communications, please label "PROPOSED" or "DRAFT")

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA. 22202, Sixth Floor (Receptionist).

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jamal A. Fox whose telephone number is (571) 272-3143. The examiner can normally be reached on Monday-Friday 6:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wellington Chin can be reached on (571) 272-3134. The fax phone numbers for the organization where this application or proceeding is assigned are (703)

872-9306 for regular communications and (703) 872-9315 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 306-0377.

Jamal A. Fox

Jamal A. Fox